2500.65080   09/751,571

PROPOSED CLAIM AMENDMENTS
NOT TO BE ENTERED

In the Claims:

Please cancel Claim 14, without prejudice; and amend Claims 2, 4,

7, 9, 12, and 15 as indicated below. The status of all pending claims is as follows:

1.   (Cancelled)

2.   (Currently Amended -- "Proposed")   A   method   of

determining a magnitude of a sensing current to be supplied to an electromagnetic

transducer, comprising:

supplying an electric current of a first current value to the

electromagnetic transducer;

determining a physical quantity appearing in the electromagnetic

transducer based on the electric current of the first current value;

supplying an electric current of a second current value, different

from the first current value, to the electromagnetic transducer;

determining the physical quantity appearing in the electromagnetic

transducer based on the electric current of the second current value;

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~~deriving~~ calculating, using a stored equation, a variation in temperature of the electromagnetic transducer ~~based on~~ from the change in the physical quantity; and determining the magnitude of the sensing current ~~based on a derived~~ from the calculated variation in temperature of the electromagnetic transducer.

3.   (Previously Presented)   The method of determining according to claim 2, further comprising deriving an expected lifetime of the electromagnetic transducer based on the variation in temperature when determining the magnitude of the sensing current.

4.   (Currently Amended--"Proposed")   ~~The method of determining according to claim 3, further comprising:~~ A method of determining a magnitude of a sensing current to be supplied to an electromagnetic transducer, comprising:

supplying an electric current of a first current value to the electromagnetic transducer;

determining a physical quantity appearing in the electromagnetic transducer based on the electric current of the first current value;

supplying an electric current of a second current value, different from the first

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current value, to the electromagnetic transducer;

determining the physical quantity appearing in the electromagnetic transducer based on the electric current of the second current value;

deriving a variation in temperature of the electromagnetic transducer based on the change in the physical quantity;

determining the magnitude of the sensing current based on a derived variation in temperature of the electromagnetic transducer; and

deriving an expected lifetime of the electromagnetic transducer based on the variation in temperature when determining the magnitude of the sensing current.

5.   (Original)   The method of determining according to claim 4, wherein said predetermined upper limit lifetime represents a sum of a minimum lifetime required to the electromagnetic transducer and a margin to be added to the minimum lifetime.

6.   (Original)   The method of determining according to claim 5, wherein said incremental value is stepwise reduced as the preceding second current value gets larger.

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7. (Currently Amended -- "Proposed") A method of determining a magnitude of a sensing current to be supplied to an electromagnetic transducer, comprising:

supplying an electric current of a first current value to the electromagnetic transducer;

calculating a first electric resistance value of the electromagnetic transducer based on a first voltage value appearing in the electromagnetic transducer in response to supply of the electric current of the first current value;

supplying an electric current of a second current value, different from the first current value, to the electromagnetic transducer;

calculating a second electric resistance value of the electromagnetic transducer based on a second voltage value appearing in the electromagnetic transducer in response to supply of the electric current of the second current value;

calculating, using a stored equation, a quantity of variation in temperature of the electromagnetic transducer based-on- from the first and second electric resistance values; and

determining the magnitude of the sensing current based-on-a- from the —calculated quantity of variation in temperature of the electromagnetic transducer.

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8.   (Previously Presented)   The method of determining according to claim 7, further comprising, deriving an expected lifetime of the electromagnetic transducer based on the quantity of variation in temperature of the electromagnetic transducer when determining the magnitude of the sensing current.

9.   (Currently Amended -- "Proposed")   ~~The method of determining according to claim 8, further comprising:~~ A method of determining a magnitude of a sensing current to be supplied to an electromagnetic transducer, comprising:

supplying an electric current of a first current value to the electromagnetic

transducer;

calculating a first electric resistance value of the electromagnetic transducer based on a first voltage value appearing in the electromagnetic transducer in response to supply of the electric current of the first current value;

supplying an electric current of a second current value, different from the first current value, to the electromagnetic transducer;

calculating a second electric resistance value of the electromagnetic transducer based on a second voltage value appearing in the electromagnetic transducer in response to supply of the electric current of the second current value;

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calculating a quantity of variation in temperature of the electromagnetic transducer based on the first and second electric resistance values; and

determining the magnitude of the sensing current based on a calculated quantity of variation in temperature of the electromagnetic transducer and;

deriving an expected lifetime of the electromagnetic transducer based on the quantity of variation in temperature of the electromagnetic transducer when determining the magnitude of the sensing current;

comparing the expected lifetime with a predetermined target upper limit lifetime; and

adding an incremental value to a preceding second current value so as to set a new second current value if the expected lifetime takes a value below the predetermined target upper limit lifetime.

10.   (Original)   The method of determining according to claim 9, wherein said predetermined upper limit lifetime represents a sum of a minimum lifetime required to the electromagnetic transducer and a margin to be added to the minimum lifetime.

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11. (Original) The method of determining according to claim 10, wherein said incremental value is stepwise reduced as the preceding second current value gets larger.

12. (Currently Amended -- "Proposed") A computer-readable storage medium containing program instructions for determining a magnitude of a sensing current to be supplied to an electromagnetic transducer, comprising:

computer program code causing a computer to supply an electric current of a first current value to the electromagnetic transducer;

computer program code causing a computer to determine a physical quantity appearing in the electromagnetic transducer based on the electric current of the first current value;

computer program code causing a computer to supply an electric current of a second current value, different from the first current value, to the electromagnetic transducer;

computer program code causing a computer to determine the physical quantity appearing in the electromagnetic transducer based on the electric current of the second current value; and

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computer program code causing a computer to determine the magnitude of the sensing current based on a change of the physical ~~quantity.~~ quantity;

computer program code causing a computer to calculate a first electric resistance value of the electromagnetic transducer based on a first voltage value appearing in the electromagnetic transducer in response to supply of the electric current of the first current value;

computer program code causing a computer to calculate a second electric resistance value of the electromagnetic transducer based on a second voltage value appearing in the electromagnetic transducer in response to supply of the electric current of the second current value; and

computer program code causing a computer to calculate a quantity, using a stored equation, of variation in temperature of the electromagnetic transducer from the first and second electric resistance values in determining the magnitude of the sensing current.

13.   (Original)   The   computer-readable   storage   medium according   to   claim   12,   wherein   said   storage   medium   is   a   memory   chip incorporated in a magnetic disk drive.

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14.   (Cancelled)

15.   (Currently Amended -- "Proposed")   The   computer-readable storage medium according to ~~claim 14~~ claim 12, wherein said storage medium is a memory chip incorporated in a magnetic disk drive.

16.   (Original)   A method of determining a magnitude of a sensing current to be supplied to an electromagnetic transducer for reading data, comprising:

supplying an electric current of a first current value to the electromagnetic transducer for reading data;

determining a physical quantity appearing in the electromagnetic transducer for reading data based on the electric current of the first current value;

supplying an electric current of a second current value, different from the first current value, to the electromagnetic transducer for reading data;

supplying an electric current of a predetermined current value to an electromagnetic transducer for writing data, which is paired with the electromagnetic transducer for reading data;

determining the physical quantity appearing in the electromagnetic transducer for reading data based on the electric current of the second current value; and

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determining the magnitude of the sensing current based on change found in the physical quantity.

17. (Original) The method of determining according to claim 16, further comprising:

calculating a first electric resistance value of the electromagnetic transducer based on a first voltage value appearing in the electromagnetic transducer in response to supply of the electric current of the first current value;

calculating a second electric resistance value of the electromagnetic transducer based on a second voltage value appearing in the electromagnetic transducer in response to supply of the electric current of the second current value; and

calculating a quantity of variation in temperature of the electromagnetic transducer based on the first and second electric resistance values in determining the magnitude of the sensing current.

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